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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,242	12/04/2003	Axel Scherer	CIT.PAU.42	1194

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EXAMINER

LUU, THANH X

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/729,242	Applicant(s) SCHERER ET AL.	
	Examiner Thanh X. Luu	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 23 January 2006.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-64 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-5, 7-14, 16, 17, 20-25, 27-30, 33-37, 39-57 and 59-62 is/are rejected.

7) ☒ Claim(s) 6, 15, 18, 19, 26, 31, 32, 38, 58, 63 and 64 is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 23 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

This Office Action is in response to amendments and remarks filed January 23, 2006. Claims 1-64 are currently pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless—

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-5, 11-13, 27, 29, 33, 35, 37, 38, 43-45, 50, 51, 59 and 61, are rejected under 35 U.S.C. 102(e) as being anticipated by Lim et al. (U.S. Patent 6,661,938).

Regarding claims 1, 3-5, 11-13, 27, 29, 33, 35, 37, 38, 43-45, 50, 51, 59 and 61, Lim et al. disclose (see Fig. 1) a microsensor and method for sensing a substance, comprising: a substrate (not shown; see also col. 4, lines 5-10); a source of light (106); an optical microresonator (104) fabricated in the substrate exposed to the substance to allow an interaction between the microresonator and the substance; a waveguide (102) coupling the source of light to the microresonator; and a detector (108) coupled to the microresonator to measure a performance parameter of the microresonator sensitive to interaction of the substance with the microresonator. Lim et al. also disclose a ring microresonator (see col. 2, line 60); an initial Q of 10000 or greater (see col. 3, line 33);

the performance parameter is the resonant frequency (see Fig. 2); a plurality of microresonators and detectors (see col. 4, lines 5-10) as claimed. The method steps are inherently carried out in the apparatus. An addressing circuit is inherent since the detectors would have be accessed and readout.

3. Claims 1, 3, 18, 29, 33, 35, 50 and 61, are rejected under 35 U.S.C. 102(e) as being anticipated by Boyd et al. (U.S. Patent Application Publication 2004/0023396).

Regarding claims 1, 3, 18-20, 29, 33, 35, 50 and 61, Boyd et al. disclose (see Fig. 1) a microsensor and method for sensing a substance, comprising: a substrate (not shown; see paragraph [0021]); a source of light (16); an optical ring microresonator (12) fabricated in the substrate exposed to the substance to allow an interaction between the microresonator and the substance; a waveguide (14) coupling the source of light to the microresonator; and a detector (18) coupled to the microresonator to measure a performance parameter (loss) of the microresonator sensitive to interaction of the substance with the microresonator. Boyd et al. also disclose the performance parameter is an optical absorption loss (see paragraph [0054]) as claimed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 30 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Lim et al. or Boyd et al.

Regarding claims 30 and 62, Lim et al. and Boyd et al. disclose the invention as set forth above. Lim et al. and Boyd et al. further disclose the source of light is a laser. Lim et al. and Boyd et al. do not specifically disclose the type of laser as claimed. However, VCSELs are notoriously well known. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a VCSEL in the apparatus and method of Lim et al. or Boyd et al. to obtain compact and stable light source.

6. Claims 2, 20-25, 34, 52-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim et al.

Regarding claims 2, 20-22, 34 and 52-54, Lim et al. disclose the invention as set forth above. Lim et al. also disclose the coating alters an optical parameter (refractive index) as claimed. Lim et al. do not specifically disclose a polymer coating as claimed. However, it is well known that polymer coatings are reactive to certain gases or substances. Furthermore, choosing the type of coating requires only routine skill in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a polymer coating in the apparatus and method of Lim et al. to detect a specific desired substance.

Regarding claims 23 and 55, Lim et al. disclose the invention as set forth above. Lim et al. do not specifically disclose using ELISA techniques as claimed. However, ELISA techniques are well known. Furthermore, choosing the type of coating requires only routine skill in the art. It would have been obvious to a person of ordinary skill in

the art at the time the invention was made to provide use ELISA techniques in the apparatus and method of Lim et al. to detect a specific desired substance.

Regarding claims 24, 25, 56 and 57, Lim et al. disclose the invention as set forth above. Lim et al. do not specifically disclose elastomeric coating or coating using a microfountain pen as claimed. However, elastomeric coating is well known. Furthermore, choosing the manner how the coating is applied requires only routine skill in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide use elastomeric techniques or a microfountain in the apparatus and method of Lim et al. effectively and precisely apply the coating.

7. Claims 7, 16, 17, 39, 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim et al. in view of Hollis et al. (U.S. Patent 5,846,708).

Regarding claims 7 and 39, Lim et al. disclose the invention as set forth above. Lim et al. do not specifically disclose the performance parameter is the quality factor as claimed. Hollis et al. teach (see col. 2, line 55) that a change the quality factor provides the substance detection. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide examine the quality factor in the apparatus and method of Lim et al. in view of Hollis et al. to further obtain the performance parameter.

Regarding claims 16, 17, 48 and 49, Lim et al. disclose the invention as set forth above. Lim et al. do not specifically disclose a microfluidic circuit as claimed. Hollis et al. teach (see Fig. 18) the claimed microfluidic circuit. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such

a circuit in the apparatus and method of Lim et al. in view of Hollis et al. to efficiently deliver the substance for detection.

8. Claims 10 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim et al. in view of Ilchenko (U.S. Patent 6,798,947).

Regarding claims 10 and 42, Lim et al. disclose the invention as set forth above. Lim et al. do not specifically disclose a fiber and a grating coupler as claimed. Ilchenko teaches (see Fig. 8) the claimed fiber and grating coupler. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such a read-out optic in the apparatus and method of Lim et al. in view of Ilchenko to improve detection as taught.

9. Claims 8, 9, 14, 28, 40, 41, 46, 47 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim et al. in view of Soref et al. (U.S. Patent 6,195,187).

Regarding claims 8, 9, 14, 28, 40, 41, 46, 47 and 60, Lim et al. disclose the invention as set forth above. Lim et al. do not specifically disclose a SOI substrate or a germanium detector as claimed. Soref et al. teach (see Figs) fabricating microresonators on an SOI substrate. Furthermore, germanium detectors are well known. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an SOI substrate and a germanium detector in the apparatus and method of Lim et al. in view of Ilchenko to obtain a desired wavelength response and to more easily incorporate the waveguide onto the substrate.

Allowable Subject Matter

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10. Claims 6, 15, 18, 19, 26, 31, 32, 38, 58, 63 and 64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

11. Applicant's arguments filed January 23, 2006 have been fully considered but they are not persuasive.

Applicant asserts that Lim et al. do not disclose a substrate and the microresonator fabricated in the substrate. Examiner disagrees. Examiner has clarified that such a feature is shown in column 4, lines 5-10 ("pack a large number of these resonators [on] a single carrier substrate").

Applicant asserts that Lim et al. do not disclose a waveguide. Examiner disagrees. Since element 102 serves to couple and guide radiation from the light source, as understood, such an element serves as a waveguide. Furthermore, Lim et al. uses the terms "waveguide" throughout the specification when referring to the area between the light source and the microresonator. Also, as understood, since the light source is (optically) coupled to the microresonator, there is "coupling" as claimed.

Applicant asserts that Lim et al. do not disclose a Q factor of 10,000 or greater. Examiner disagrees. The terms "up to 10,000" is inclusive of 10,000. It is unclear how the value of 10,000 does not read on 10,000 or greater.

Applicant asserts that addressing and reading circuitry is not inherent. However, Applicant has failed to state why such circuitry is not inherent or state any other

alternatives to such circuitry. As understood, Examiner did successfully shift the burden to the Applicant to disapprove inherency as Examiner did provide a rationale.

Applicant also asserts that Boyd et al. do not disclose a substrate and coupling. Examiner disagrees. Boyd et al. clearly disclose (see paragraph [0021] "onto a substrate... which includes the waveguide(s) and resonator(s)) a substrate as claimed. Furthermore, since (optical) coupling between the light source and the microresonator is present, there is "coupling."

Applicant asserts that Boyd et al. do not disclose a ring microresonator. Examiner disagrees. The title of Boyd et al. specifically mentions a ring resonator. Furthermore, it is clear from the figure that the resonator is in the form of a ring.

Applicants other arguments are spurious and are found to be not persuasive.

Thus, as set forth above, this rejection is proper.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maseeh (U.S. Patent 6,721,053) discloses a similar device.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is 571-272-2441. The examiner can normally be reached on M-F 6:00AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thanh X Luu
Primary Examiner
Art Unit 2878

02/2006